

L18 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN

TI Skin whitening compositions based on hydroxyaryl alkyl ketones and their

isosteric derivatives

AB Certain hydroxyaryl or polyhydroxyaryl compds. that contain an alkyl

carbon side chain with a hetero-atom group attached by a double bond at

the first carbon atom of the alkyl side chain that is directly attached to

the aromatic ring provide a surprising and unexpected skin whitening effect.

The addition of metal ions, such as copper, zinc, selenium, or vanadium and

certain antioxidant compns. addnl. increases the skin whitening effect.

For example, a skin lightener serum with copper ions was prepared by mixing

water 20.0, quinacetophenone 5.0, methylpropanediol 69.0, dimethicone

copoloyol 4.0, preservatives 0.5, copper gluconate 0.5, and ammonium

acryloylidimethyltaurate/VP copolymer 1.0 weight%, resp., at room temperature. The

product had a clear to slightly hazy syrup-like light blue appearance,

typical of a skin serum product. It was absorbed rapidly with a silky

smooth skin feel. A skin lightening effect was observed in human volunteers.

ACCESSION NUMBER: 2005:1293554 CAPLUS

DOCUMENT NUMBER: 144:40393

TITLE: Skin whitening compositions based on hydroxyaryl alkyl

ketones and their isosteric derivatives

Gupta, Shyam K.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 15 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

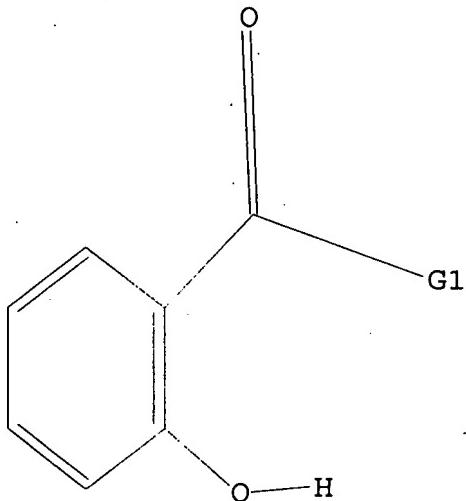
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
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US 2005271608 20040605	A1	20051208	US 2004-862037
US 2007099886 20060804	A1	20070503	US 2006-309437
PRIORITY APPLN. INFO.: 20040605			US 2004-862037 A2

=> d que 118

L13

STR



G1 Me,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu

Structure attributes must be viewed using STN Express query preparation.

L15 8633 SEA FILE=REGISTRY SSS FUL L13

L16 11834 SEA L15

L17 1093 SEA L16 (S) (HYDROXYARYL OR ACETOPHENONE)

L18 1 SEA L17 (S) (TOPICAL? OR LOTION? OR SKIN? OR DERMA?
OR

EPIDERM? OR COSMETIC? OR COSMECEUTICAL?)

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L3 STRUCTURE uploaded
L4 50 S L3 SSS SAM
L5 52778 S L3 SSS FULL
L6 STRUCTURE uploaded
L7 36 S L6 SSS SAM

L8 STRUCTURE UPLOADED
L9 0 S L8 SSS SAM
L10 0 S L8 SSS FULL
L11 STRUCTURE UPLOADED
L12 28 S L11 SSS SAM
L13 STRUCTURE UPLOADED
L14 43 S L13 SSS SAM
L15 8633 S L13 SSS FULL

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FILE 'CAPLUS, USPATFULL, MEDLINE' ENTERED AT 17:27:43 ON 08 AUG
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L18 1 S L17 (S) (TOPICAL? OR LOTION? OR SKIN? OR DERMA? OR
EPIDERM? O
L19 1 S L17 (P) (TOPICAL? OR LOTION? OR SKIN? OR DERMA? OR
EPIDERM? O
L20 1094 S L16 (P) (HYDROXYARYL OR ACETOPHENONE)
L21 1 S L20 (P) (TOPICAL? OR LOTION? OR SKIN? OR DERMA? OR
EPIDERM? O
L22 10 S L20 AND (TOPICAL? OR LOTION? OR SKIN? OR DERMA? OR
EPIDERM? O
L23 10 DUP REM L22 (0 DUPLICATES REMOVED)
L24 9 S L23 NOT L18

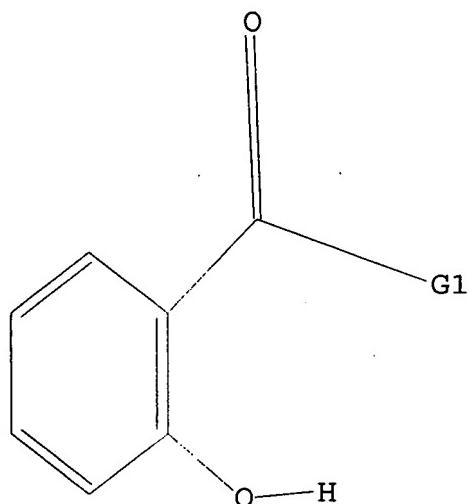
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L13 STR



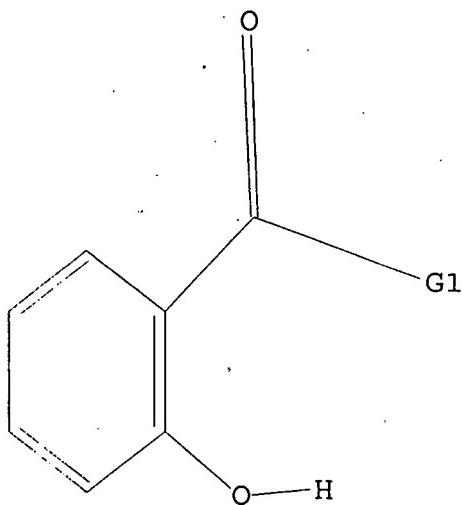
G1 Me,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu

Structure attributes must be viewed using STN Express query preparation.

L15 8633 SEA FILE=REGISTRY SSS FUL L13
L16 11834 SEA L15
L17 1093 SEA L16 (S) (HYDROXYARYL OR ACETOPHENONE)
L19 1 SEA L17 (P) (TOPICAL? OR LOTION? OR SKIN? OR DERMA?
OR
EPIDERM? OR COSMETIC? OR COSMECEUTICAL?)

=> d que 121

L13 STR



G1 Me,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu

Structure attributes must be viewed using STN Express query preparation.

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L16 11834 SEA L15

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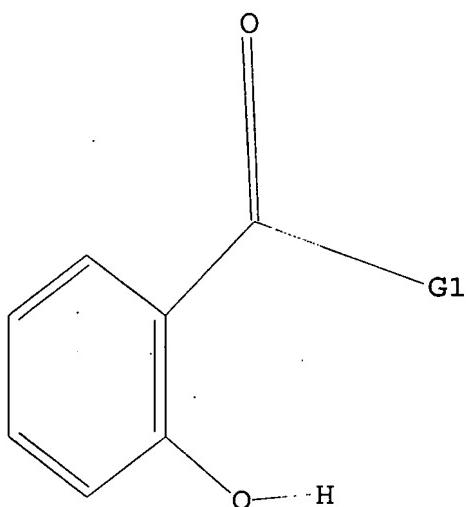
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OR

EPIDERM? OR COSMETIC? OR COSMECEUTICAL?)

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L13 STR



G1 Me,Et,n-Pr,i-Pr,n-Bu,i-Bu,s-Bu,t-Bu

Structure attributes must be viewed using STN Express query preparation.

L15 8633 SEA FILE=REGISTRY SSS FUL L13
L16 11834 SEA L15
L20 1094 SEA L16 (P) (HYDROXYARYL OR ACETOPHENONE)
L22 10 SEA L20 AND (TOPICAL? OR LOTION? OR SKIN? OR DERMA?
OR
EPIDERM? OR COSMETIC? OR COSMECEUTICAL?)

L24 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2007 ACS on STN

TI Preparation of substituted acetophenone derivatives such as chalcones,

chromones and Knoevenagel products as antitumor, antibacterial, antiviral,

immunomodulating and immunostimulating agents

AB The title compds. selected from (1) chalcones R1CH:CHCOR2 [R1 = 5-hydroxymethylfuran-2-yl, 4-methoxyphenyl,

4-hydroxy-3-methoxyphenyl,

furan-2-yl, 3-methoxy-4-(3-methylbut-2-enyloxy)phenyl; R2 = 4-chlorophenyl, 2-hydroxyphenyl,

2-hydroxy-5-(3-methylbut-2-enyl)phenyl,

etc.], (2) chromones [I; R1 as above; R3, R4, R5 = H,

5-hydroxymethylfuran-

2-yl, 4-methoxyphenyl, etc.] and (3) Knoevenagel products

(CN) 2C:CR6Me [R6

= 2-(3-methylbut-2-enyloxy)phenyl,

4-(3-methylbut-2-enyloxy)phenyl,

4-hydroxyphenyl], were prepared Thus,

1-(2-hydroxyphenyl)-3-[3-methoxy-4-(3-

methylbut-2-enyloxy)phenyl]propenone and AcONa·3H₂O in EtOH were heated under reflux for 8 h to give 83%

2-[3-methoxy-4-(3-methylbut-2-

enyoxy)phenyl]chroman-4-one. The latter showed very strong activity

against a variety of human tumor cells with IC₅₀ = 6-84 µg/mL.

ACCESSION NUMBER: 2007:322971 CAPLUS

DOCUMENT NUMBER: 146:358706

TITLE: Preparation of substituted acetophenone derivatives

such as chalcones, chromones and Knoevenagel products

as antitumor, antibacterial, antiviral, immunomodulating and immunostimulating agents Suarez, Jose Augustin Quincoces; Peseke,

INVENTOR(S): Klaus; Molina

Ruiz, Reinaldo

PATENT ASSIGNEE(S): Riemser Arzneimittel AG, Germany

SOURCE: Eur. Pat. Appl., 29pp.

CODEN: EPXXDW

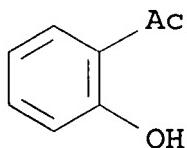
DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.
DATE			
EP 1764363 20060913	A2	20070321	EP 2006-19204
EP 1764363 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU	A3	20070516	
DE 102005044156 20050915	A1	20070329	DE 2005-102005044156
PRIORITY APPLN. INFO.: 20050915			DE 2005-102005044156A
OTHER SOURCE(S): IT <u>118-93-4</u>		CASREACT 146:358706; MARPAT 146:358706	
RL: RCT (Reactant); RACT (Reactant or reagent) (preparation of substituted <u>acetophenone</u> derivs. such as chalcones, chromones and Knoevenagel products as antitumor, antibacterial, antiviral, immunomodulating and immunostimulating agents)			
RN 118-93-4 CAPLUS			
CN Ethanone, 1-(2-hydroxyphenyl)- (CA INDEX NAME)			



L24 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2007 ACS on STN

TI Dihydro and tetrahydrofurans

AB Compds. RR₁C.O.CR₂R₃.Z, in which Z is an ethylene or vinylene radical

which may be substituted by a carboxyl, alkyl or ether group, R is the

group COCYHCOX in which Y is H or lower hydrocarbon, X is H or lower

hydrocarbon such as cycloalkyl, monocyclicaryl, dialkylaminoalkyl or a

heterocyclic group, R1 and R2 are lower alkoxy and R3 is H or lower alkyl,

are useful as intermediates in the preparation of polyhydroxyphenyl ketones.

The latter are useful as tanning agents, in permanent inks, as photog.

developers, as chelating agents and as sunscreen agents. Et furoate (I)

38.0 parts and 1 volume concentrated H₂SO₄ in 250 vols. MeOH is electrolyzed in a

Ni cathode-graphite anode cell, 19.4 amp. hrs. being passed in 8 h.

beginning at 9 v. and 3.5 amp. at -15° to -22°. The solution is neutralized with NaOMe in MeOH, concentrated, filtered and the filtrate

distilled to give Et 2,5-dimethoxy-2,5-dihydrofuroate (II), b21 136-9°, nD₂₅ 1.4480. II 25.9 and NaH 6.8 are treated with acetone

(III) 16.5 in 25 vols. Et₂O added dropwise over 0.5 h. at 30-40°.

H is evolved and stirring continued 0.5 h., 100 vols. Et₂O added and the

mixture kept 3 days. EtOH (95%, 15 vols.) is added, and the mixture decomposed

at 0° with 100 vols. water and AcOH 18 parts. The layers are separated, the aqueous phase extracted with Et₂O, and the combined layers are dried

and distilled to give

2-acetoacetyl-2,5-dimethoxy-2,5-dihydrofuran (IV), b0.2

97°, nD₂₃ 1.4956. Me 2,5-dimethoxytetrahydrofuroate (V) 26.1 and NaH 6.6 treated with III 16 parts give 2-acetoacetyl-2,5-dimethoxytetrahydrofuran (VI), b0.5 87-91°, nD₂₃ 1.4825. IV 5.35 parts, 50 vols. 0.1N HCl and a small chip of solid CO₂ are stirred 6 h. in

a closed flask.

2,2',4,4',5,5'-Hexahydroxy-3,3'-diacetyldiphenyl, m.

280° (decomposition), seps. as a mustard-yellow precipitate and is filtered

off. Chilling the clear yellow filtrate gives brilliant yellow crystals

of 2,3,6-trihydroxyacetophenone (VII), m. 157.5-59°. VI 7.4 parts

and 75 vols. 0.1N HCl refluxed 1 h. give
2,3-dihydroxyacetophenone, m.

98-8.5°, yellow. V 38.0, NaH 4.8, and 3-acetylpyridine 12.1 parts

give 2-nicotinoylacetyl-2,5-dimethoxytetrahydrofuran (VIII), b0.06

150-8° (slight decomposition), viscous yellow oil which solidifies after

several months. VIII 8.5 parts and 200 vols. 0.5N HCl give 3-nicotinoylpyrocatechol, m. 154-6°, yellow. I 38.0 is electrolyzed in 250 vols. EtOH to give Et

2,5-diethoxy-2,5-dihydrofuroate

(IX) 31.6 parts, b21 145-50°. IX condensed with III 16.5 and Nail

6.8 parts gives 2-acetoacetyl-2,5-diethoxy-2,5-dihydrofuran (X). Hydrolysis of X with HCl gives VII. V 38.0, NaH 4.8, and diethylaminoacetone 25.8 parts give 2-ethyldiaminoacetoacetyl 2,5-dimethoxytetrahydrofuroate. V 38.0, NaH 4.8, and Me cyclohexyl ketone

24.6 parts give 2-(cyclohexanecarbonylacetyl)-2,5-dimethoxytetrahydrofuran. Me

2,5-dimethoxy-5-isopropyltetrahydrofuroate

31.6, NaH 6.8, and III 16.5 parts give

2-acetoacetyl-5-isopropyl-2,5-

dimethoxytetrahydrofuran, b0.1 93-7°. V 25.9, NaH 6.8, and pinacolone 28.5 parts give

2-pivaloylacetyl-2,5-dimethoxytetrahydrofuran,

b0.1 105-12°. V 25.9, NaH 6.8, and 4-methylpropiophenone 45.0 parts give 2-[α -(4-methylbenzoyl)propionyl]-2,5-dimethoxytetrahydrofuran. V 38.0 NaH 4.8, and PhCOMe 24 parts give

2-benzoylacetyl-2,5-dimethoxytetrahydrofuran which can be hydrolyzed to

2,3-dihydroxybenzophenone, m. 65°.

ACCESSION NUMBER: 1960:39125 CAPLUS

DOCUMENT NUMBER: 54:39125

ORIGINAL REFERENCE NO.: 54:7732f-i,7733a-d

TITLE: Dihydro and tetrahydrofurans

INVENTOR(S): Boehme, Werner R.

PATENT ASSIGNEE(S): Ethicon, Inc.

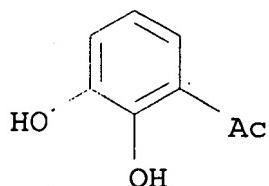
DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.
DATE	-----	-----	-----	-----
19580827	US 2921078		19600112	US 1958-757451
IT	<u>13494-10-5P</u> , <u>Acetophenone</u> , 2',3'-dihydroxy-			
	RL: PREP (Preparation)			
	(preparation of)			
RN	13494-10-5 CAPLUS			
CN	Ethanone, 1-(2,3-dihydroxyphenyl)- (CA INDEX NAME)			



L24 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2007 ACS on STN
TI Rearrangements of phenol esters in hydrogen fluoride.

Condensation of

β -oxo esters with phenols in HF

AB Results of Fries rearrangements of phenol esters induced by anhydrous HF are

compared with those reported earlier using BF_3 and AlCl_3 . The esters are

mixed with com. anhydrous HF at 0° in a cast-steel bomb of 360 mL.

capacity, then allowed to warm to room temperature or heated to the reaction

temperature and rocked; after the desired reaction period, the HF is driven off

at 100° and the residue poured into a little H_2O ; if not crystalline,

the product is taken up in Et_2O . Of a variety of conditions, the best (10

g. PhOAc and 150 mL HF kept 24 h. at 20°) gave an 81% yield of p-hydroxyacetophenone (I), m. 105-7° (2,4-dinitrophenylhydrazone, dark red); small amts. (2%) of the o-isomer (II) were isolated by steam

distillation and converted to the light red 2,4-dinitrophenylhydrazone. Heating

10 g. PhOH, 10 g. HOAc, and 150 mL HF 1 h. at 100° gave 61.6% I (m. 107-9°) and 2% crude II; 24 h. at 20° gave 40% I.

Reaction of 10 g. m-MeC₆H₄OAc in 20 mL HF for 24 h. at 20° gives 16.5% 4-hydroxy-2-methylacetophenone (III), non-volatile in steam, plates,

m. 125°, and 74% steam-volatile 7-hydroxy-4-methylacetophenone (IV), b₁₅ 115°, m. 20-1°; 1 h. at 100° gives 8.5% III

and 79.5% IV. Heating 17.8 g. 2,3,5-trimethylphenyl acetate with 100 mL

HF 1 h. at 100° yields 14.6 g. crude product from which 84% 2,3,5-trimethylphenol is isolated by crystallization from H₂O, m. 95-6°

(from petr. ether); the crude product yields traces of a red, unidentified

2,4-dinitrophenylhydrazone. The product obtained by heating 15 g.

p-MeC₆H₄OAc in 30 mL HF for 1 h. at 120-5° is distilled (b₁₆ 124°) and recrystd. from petr. ether to give 63%

2-hydroxy-5-methylacetophenone. Reaction of 2-MeOC₆H₄OAc under the best

(100 g. in 200 mL HF for 40 days at 0°) of a variety of conditions

gives 78% of a mixture of 4-hydroxy-3-methoxyacetophenone (V) and 3-hydroxy-4-methoxyacetophenone (VI), b_{1.5} 152-9°, m.

72-96°, shown by reference to a mixed-m.p. diagram of authentic V (m.

116°) and VI (m. 93°) to consist of 64% V and 36% VI; the diagram shows a eutectic at 40% V, which m. 72°. After heating

25

g. V in 20 mL HF for 45 min. at 70°, only 0.7 g. of unchanged V was isolable. Reaction of 12.5 g. guaiacol with 8 g. glacial HOAc in 200

mL HF for 40 days at 0° gives 63% of a mixture, m. 72-93° (60% V and 40% VI), shown by paper chromatog. (cf. Way and Gailey, C.A.

45, 10498b) to be free of 1-hydroxy-2-methoxyacetophenone. After 24 h. at

room temperature in 150 mL. HF, 5 g. Ph chloroacetate yields a product from

which 0.5 g. red crystals are isolated by crystallization from MeOH; these give a

precipitate on treatment with a solution of 2,4-dinitrophenylhydrazine; the alc.

mother liquors produce a strongly-itching allergic exzema on contact with

the skin and were not investigated further. After standing 20 days in HF, Ph trichloroacetate is recovered essentially unchanged;

complete decomposition results on heating 1 h. at 100°. Guaiacyl formate (nD_{20} 1.523, prepared in 80% yield by the action of 15% HO₂Ac in

glacial HOAc on o-MeOC₆H₄CHO) reacts with HF to yield guaiacol and CO as

principal products; no appreciable carboxylic material is formed.

(PhO₂C)₂ fails to react in HF at room temperature and is decomposed at higher

temps., presumably due in part to its low solubility in HF; heating 5 g. of the

ester with 20 mL. CCl₄ and 40 mL. HF at 80° for 4 h. results in formation of 0.3 g. 4,4'-dihydroxybenzophenone (presumably attack on the

CCl₄), yellow needles, m. 206°. From the product formed by shaking

10 g. di-Ph adipate in 100 mL. HF for 2 days is isolated 2 g. citron-yellow microneedles (from EtOH), m. 241-2° (decomposition);

2,4-dinitrophenylhydrazone (from dioxane), m. 265-6°, analyses of which, however, are not in agreement with those expected from the anticipated 1,6-bis(p-hydroxyphenyl)-1,6-hexadione; the substance gives no

FeCl₃ test, but turns blue-green on treatment with NH₃H₇P(MO₂O₇)₆.

Recrystn. from C₆H₅CH₃ of the yellow-red crude product from reaction of 20

g. Ph cinnamate in 40 mL. HF for 43 h. at room temperature gives a 55% yield of

4'-hydroxycalcone, yellow needles, m. 172-3°, color tests with FeCl₃ and H₇P(MO₂O₇)₆ neg. With the p-position of the Ph cinnamate

blocked, ring-closure (rather than migration of the cinnamyl group)

predominates; thus the crude product obtained by heating 10 g. p-tolyl cinnamate (VII) in 20 mL HF for 2 h. at 100° is distilled (b15 180-220°) and recrystd. from MeOH to give 3.2 g. 6-methyl-4-phenyl-2,3-dihydrocoumarin (VIII), prisms, m. 80-1°. Heating 5 g. 2'-hydroxy-5'-methylchalcone (the alternate product which might have been expected from the action of HF on VII) with 15 mL HF for 1 h. at 100° gives a crude product which is distilled and recrystd. to yield 1.5 g. 6-methylflavanone, plates, m. 105°. Heating 585 mg. VIII with 290 mg. freshly-prepared Pd-black for 6.5 h. at 240°, followed by distillation, gives 200 mg. colorless oil, b3 110-40° (probably 1-(*m*-methylphenyl)-1-phenylethane), and a viscous yellow oil (b3 160-80°) which solidifies, colorless prisms from MeOH, m. 131-2°, identified by mixed m.p. as 6-methyl-4-phenylcoumarin. Hydrolysis of 1 g. VII (by refluxing 5 h. with 1.2 g. NaOH in 9 mL MeOH) gives 0.75 g. 3-(2-hydroxy-5-methylphenyl)-3-phenylpropionic acid, m. 125° (from C6H6), which loses H2O at 140° and is thus reconverted to VIII. Treating VIII (250 mg.) with aqueous KOH and Me2SO4 yields a mixture of acidic and neutral products; recrystn. of the former from MeOH gives 0.75 g. 3-(2-methoxy-5-methylphenyl)-3-phenylpropionic acid, needles, m. 136-7°; the neutral material is presumed to be the corresponding Me ester, prisms from aqueous MeOH, m. 51-2°. Using the procedure of Spasov (C.A. 36, 7010.2), 15 g. phenylpropiolyl chloride gives 18 g. p-tolyl phenylpropiolate (IX), needles from petr. ether, m. 56-7°. IX (10 g.) in 150 mL HF for 5.5 h. at 0° gives a crude product which is distilled to give 3.2 g. viscous yellow oil, b1.5 140-80°, which solidifies; recrystn. from MeOH gives 2.2 g. yellow prisms (IXa), m. 130-1°; mother liquors yield an addnl. 0.5 g. IXa.

By standing overnight in 5% MeOH-KOH, the yellow impurity is destroyed,

leaving colorless 6-methyl-4-phenylcoumarin, m. 130-1°.

Condensation of β -oxo esters with phenols in the presence of HF gives

good yields of coumarins or flavones. The crude product formed by heating

10 g. $\text{EtO}_2\text{CCH}_2\text{Ac}$ (X) with 10 g. PhOH in 200 mL. HF for 1 h. at 100°

is taken up in Et₂O, washed with 2M NaOH and H₂O, distilled, and recrystd.

from H₂O, giving 7.5 g. 4-methylcoumarin, m. 81-2°. p-Cresol (XI) reacts similarly, giving 65% 4,6-dimethylcoumarin, prisms from MeOH, m.

149-51°. After heating 5 g. $\text{EtO}_2\text{CCH}_2\text{Bz}$ (XII) with 6 g. XI in 110 mL. HF for 1 h. at 100°, the product is distilled and the viscous main

fraction (b_{0.8} 160-95°) dissolved in 5% MeOH-KOH and let stand 12 h. Strong dilution with H₂O gives a precipitate which is recrystd. from aqueous MeOH

and from petr. ether to yield 1.5 g. 6-methylflavone, needles, m. 122°; following acidification of the filtrate from the 1st, a 2nd precipitate slowly forms which is recrystd. from aqueous MeOH to give 1 g.

6-methyl-4-phenylcoumarin, prisms, m. 131°. Similarly, PhOH and XII react to give flavone, m. 96-7°, and 4-phenylcoumarin, m. 91-2°.

ACCESSION NUMBER: 1956:12308 CAPLUS

DOCUMENT NUMBER: 50:12308

ORIGINAL REFERENCE NO.: 50:2566c-i,2567a-h

TITLE: Rearrangements of phenol esters in hydrogen fluoride.

Condensation of β -oxo esters with phenols in HF

AUTHOR(S): Dann, Otto; Mylius, Gering

CORPORATE SOURCE: Univ. Erlangen, Germany

SOURCE: Ann. (1954), 587, 1-15

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

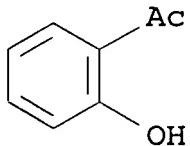
OTHER SOURCE(S): CASREACT 50:12308

IT 118-93-4P, Acetophenone, 2'-hydroxy- 1450-72-2P,
Acetophenone, 2'-hydroxy-5'-methyl- 6921-64-8P,
Acetophenone, 2'-hydroxy-4'-methyl-

RL: PREP (Preparation)
(preparation of)

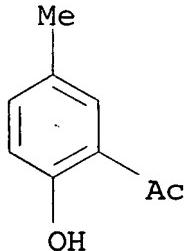
RN 118-93-4 CAPLUS

CN Ethanone, 1-(2-hydroxyphenyl)- (CA INDEX NAME)



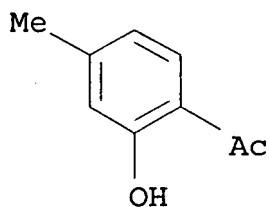
RN 1450-72-2 CAPLUS

CN Ethanone, 1-(2-hydroxy-5-methylphenyl)- (CA INDEX NAME)



RN 6921-64-8 CAPLUS

CN Ethanone, 1-(2-hydroxy-4-methylphenyl)- (CA INDEX NAME)



L24 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2007 ACS on STN

TI Synthesis of some hydroxy alkylbenzoquinones

AB The Thiele addition of 30 mL. Ac₂O containing a little 96% H₂SO₄ to 4.5 g.

cyclohexyl-p-quinone (I) was incomplete after 27 days; the excess Ac₂O was

hydrolyzed in a large volume of H₂O and the product extracted with ether; the

ether residue gave 4.55 g. 2-hydroxy-5-cyclohexyl hydroquinone triacetate

(II), m. 117.8-18.2° (from C₆H₆-ligroine). II (1.67 g.) in 15 mL.

EtOH (flushed with pure N) treated with 1.5 g. NaOH in 10 mL. H₂O (flushed

with N), the mixture warmed 0.5 h. on a steam bath, acidified with 8:1 HCl,

cooled, and treated with 5.4 g. FeCl₃.6H₂O in 20 mL dilute HCl gave 0.86 g.

2-hydroxy-5-cyclohexyl-p-quinone (III), m. 89.5-91.5° (by sublimation at 65-75°/0.1 mm.), sensitive to all solvents; alkaline

solns. are red and do not change on addition of NCCH₂CO₂Et (Craven test); the

solution in concentrated H₂SO₄ is orange and stains the skin deep blue.

Resorcinol (22.0 g.) and 22.0 g. cyclohexanol mixed with 2.0 g.

Superfiltrol X-365 D were heated till a mixture of H₂O and cyclohexane began

to distill, the H₂O separated, the organic layer returned till 3.5 mL. H₂O was

collected and the temperature rose to 175°, C₆H₆ added to the cooled

mixture, the catalyst filtered, and the residue distilled to give 35.5 g. light

yellow oil yielding from C₆H₆-ligroine 32.5 g.

4-cyclohexylresorcinol

(IV), m. 123.5-5.5°. BF₃ (1.5 g.) acetylation (60 g. glacial HOAc)

of 3.85 g. IV overnight and 3 h. on a steam bath gave 3.67 g.

4-cyclohexyl-6-acetylresorcinol (V), m. 144.5-5.2° (from C₆H₆-ligroine). To 2.34 g. V in 20 mL N NaOH, flushed with pure N, was

added 21.2 mL 0.71 M H₂O₂, the mixture kept 1 h. at room temperature, then warmed

briefly, cooled, acidified (some insol. material filtered off), extracted

twice with ether (which gave a little dark oil), and acetylated in the

presence of a little Zn to give a small amount of II, m. 116-17.5°.

To a stirred and cooled solution (-5° to 5°) of 9.61 g. IV in 175 mL. 95% EtOH containing 58.5 g. HCl was added 3.6 g. NaNO₂ in 20 mL. H₂O;

dilution after 1.5 h. with 1 l. H₂O gave 8.98 g. 6-nitroso-4-cyclohexylresorcinol (VI), decompose 195° (from Me₂CO). Small portions of solid NaHSO₃ were added to 1.1 g. VI in 50 mL. 0.5 N NaOH till

the red color was discharged; a white solid neutralization with HOAc precipitated

aminoresorcinol (VII), which was filtered, washed with fresh dilute NaHSO₃,

and dissolved in 40 mL. dilute HCl containing a little SnCl₂; filtration over a

pad of Darco gave a colorless solution but no crystalline HCl salt; the solution was

used as such for oxidation expts. Hydrogenation of 1.1 g. VI in HOAc and

Ac₂O with 70 mL. presatd. PtO₂ was complete in 20 min., giving 0.8 g.

6-acetamido-4-cyclohexylresorcinol (VIII), m. 204.2-5.2° (from CHCl₃). From 30 mL. of a warm solution containing 0.003 mol VII.HCl treated with

FeCl₃ was obtained a green oil, extraction of which gave only 0.03 g. III, m.

84-7° (sublimed at 0.2 mm.). VIII in HOAc with excess FeCl₃, on ether extraction and sublimation at 90°/0.2 mm. gave a trace of III, m.

88.5-90°. No III was obtained from VIII with HNO₃ or chromic acid.

VI (as the quinone monooxime) was hydrolyzed directly by heating 0.73 g.

to reflux a few min. in 10 mL. dioxane with 0.5 mL. Me₂CO 0.5 g. CuO, and

1.6 mL. HCl diluted with 2.0 mL. H₂O; dilution gave a dark red solid, which,

dried and sublimed at 80°/0.2 mm., yielded 0.3 g. III, m.

87.5-9.5°. (4-Cyclohexylbutyl)p-quinone (IX) (1.23 g.) in 20 mL.

Ac₂O containing a little H₂SO₄ gave a neg. quinone test after 24 h. at room

temperature; the mixture stirred with H₂O yielded 1.2 g. 2-hydroxy-5-(4-

cyclohexylbutyl)hydroquinone triacetate (X), m. 77.0-7.7° (from ligroine or dilute EtOH). The filtrate from X on concentration gave a 2nd solid,

m. 62-3°, not identified, which did not have the composition of an

isomeric triacetate. X (1.95 g.) in EtOH was hydrolyzed by heating 0.5 h.

(in a N atmospheric) with dilute NaOH, acidified, cooled, treated with sufficient

EtOH to dissolve the oil, then with excess alc. FeCl₃, and the oily

product separated, dried, and sublimed at 60°/1 mm. to give 0.83 g.

2-hydroxy-5-(4-cyclohexylbutyl)-p-quinone (XI), microcryst. solid, m.

103.5-5.5°, dissolves in dilute NaOH with red color, gives no Craven

test (C.A. 25, 4538), forms in concentrated H₂SO₄ a yellow solution which stains

the skin deep blue. Decomposition with NaOAc of the red complex formed by 22 g. resorcinol, 42.5 g. cyclohexanebutyric acid, and 20.2 g.

BF₃ during 12 h. at room temperature and 3 h. on a steam bath gives 43.4 g.

4-(4-cyclohexylbutyryl)resorcinol (XII), m. 98-107° (2 crystns.

from C₆H₆-ligroine); the sharpness of the m.p. could not be increased by

further recrystn. or fractionation on a column of acid-washed alumina.

The diacetate, from Ac₂O and NaOAc, m. 82.2-3.2°, gave on hydrolysis XII with the same unsharp m.p. Reduction of XII by the

Clemmensen-Martin procedure was complete in 8 h., giving an oil, b0.2

160-70°, rapidly solidifying to white 4-(4-cyclohexylbutyl)resorcinol (XIII), m. 83.5-4.5°; diacetate, m. 58-8.6° (from dilute EtOH). BF₃ acetylation of 5.0 g. XIII as for

the preparation of V gave 4.73 g. yellow-white 4-(4-cyclohexylbutyl)-6-acetylresorcinol (XIV), m. 71.5-2.2° (from C₆H₆-ligroine); diacetate, white needles, m. 45.7-6.7°. The modified Dakin oxidation

of 2.9 g. XIV as for V gave a dark uncyclizable oil. Acetylation with

a little Zn dust present gave a few white needles, m. 76.0-7.2°,

identical (mixed m.p.) with X, thus establishing the structure of X.

Addition of 35 g. Ac₂O containing 2% H₂O to 3.9 g. 2-methyl-5-(4-cyclohexylbutyl)-

p-quinone (XV) was completed in 1 h. and after 12 h. the mixture gave 2.96

g. 2-hydroxy-3-methyl-6-(4-cyclohexylbutyl)hydroquinone triacetate (XVI),

m. 83.0-3.5° (from ligroine). Filtrates from several expts. gave a

dark yellow viscous oil which did not crystallize even after evaporative

distillation at 170°/0.3 mm. Alkaline hydrolysis of 1.25 g. XVI under N₂

dilution, and acidification gave 0.8 g. 2-hydroxy-3-methyl-6-(4-cyclohexylbutyl)hydroquinone (XVII), m. 106-7° (brown melt) (from C₆H₆ ligroine). Oxidation of 0.49 g. XVII in 15 mL 95% EtOH with excess

alc. FeCl₃ gave 0.43 g. of the p-quinone (XVIII), sublimes at 80°/0.1 mm., m. 109.5-111.5°, gives a reddish brown color with 96% H₂SO₄, does not stain the skin. To establish the structure of XVIII, 8 mL of 0.28 M Ac₂O₂ solution in HOAc and 0.56 g. XVIII

in HOAc were heated 1 h. on a steam bath, cooled, diluted, and the yellow

oil extracted with ether; the ether residue in petr. ether precipitated an oily

crystalline solid (probably starting material), which was filtered off and the

filtrate evaporated and reductively acetylated with Ac₂O, Zn dust, and a

little NaOAc, giving a small amount of light yellow oil which, crystallized from

ligroine-petr. ether, yielded 2-hydroxy-3,5-dimethyl-6-(4-cyclohexylbutyl)hydroquinone triacetate (XIX), m. 109.0-10.6°; hydrolysis, oxidation, and 2 recrystns. from dilute HOAc gave 2-hydroxy-3,5-dimethyl-6-(4-cyclohexylbutyl)-p-quinone (XX), m. 63.5-4.5°. 2,6-Dimethyl-3-(4-cyclohexylbutyl)-p-quinone (0.8 g.) reacted slowly with 10 mL Ac₂O containing a few drops H₂SO₄; in 44 h. the

quinone test was neg. and the mixture stirred with H₂O gave 1.17 g. solid

XIX, m. 110.5-11.0° (from ligroine). Alkaline hydrolysis of 4.18 g.

XIX under N and acidification gave 2.42 g. hydroquinone, m. 115-15.6°. This (2.0 g.) in 15 mL. HOAc was oxidized with excess FeCl₃ in HOAc and the mixture diluted to give 1.73 g. XX, m. 65.0-5.6°

[from petr. ether, (b. 20-40°) or sublimation at 55-60°/0.07 mm.]. XX is not extracted from the ether by saturated NaHCO₃ or 10% Na₂CO₃ but is

extracted by dilute NaOH as a violet Na salt, gives a deep violet color with

H₂SO₄, and does not dye the skin. 2,3-Dimethyl-5-(4-cyclohexylbutyl)-p-quinone reacted slowly with Ac₂O containing H₂SO₄; after 26

h. quinone was still present. The solution stirred with H₂O and the residual

oil extracted with ether gave a gum which was passed in ligroine solution through

a 5-in. column of acid-washed alumina; the poorly adsorbed unreacted

quinone was eluted by ligroine, and further elution with C₆H₆ and ligroine

gave 3 fractions, all of which, crystallized from ligroine, gave 0.3 g.

2-hydroxy-3-(4-cyclohexylbutyl)-5,6-dimethylhydroquinone triacetate (XXI),

m. 74.5-5.5° (from ligroine). XXI (150 mg.) in EtOH hydrolyzed under N with dilute NaOH gave on acidification an amber oil which solidified, and in warm HOAc with 1 g. FeCl₃ yielded 105 mg. p-quinone,

sublimes at 60°/0.2 mm., m. 68.5-70.0°, forms a sparingly soluble deep violet Na salt, gives a deep violet color in concentrated H₂SO₄. A

suspension of 4.4 g. 2,5-di-tert-butyl-p-quinone in 40 mL. Ac₂O containing

H₂SO₄, kept 48 days with occasional warming on a steam bath, gave a

semisolid residue, which, extracted with ether, yielded 3.2 g. white prisms,

m. 110-11°, resolidified at 115° and remelted at 121-2°; anal. (C 62.85, 62.61; H 6.39, 6.30; calculated for C₁₆H₂₀O₆

62.53, H 6.23%) indicated that one of the tert-Bu groups had been eliminated. A suspension of the diazonium salt from 52.5 g.

p-H₂NC₆H₄SO₃H.2H₂O was added to 200 g. ice and 30.5 g. 2,5-xylenol and 55

g. NaOH in 300 mL. H₂O, the deep red solution warmed to 40-50° after

1.5 h., treated with a slight excess of NaHSO₃, the cooled suspension

filtered, the yellow aminophenol washed with fresh dilute NaHSO₃, transferred to a mixture of 32 mL. HCl, 250 mL. H₂O, and 1 g. SnCl₂, heated

to boiling, 50 mL. HCl added, the mixture filtered over a pad of Darco, and

the filtrate treated with 100 mL. HCl to give on cooling 32.9 g. 2,5,4-Me₂(H₂N)C₆H₂OH.HCl; this (31.8 g.) in 50 mL. H₂SO₄ and 1000 mL. H₂O,

added all at once to 35 g. K₂Cr₂O₇ in 500 mL. H₂O gave 23.5 g. bright

yellow 2,5-dimethyl-p-quinone (XXII), m. 123-4°. XXII (13.6 g.) after 11 h., in 100 g. Ac₂O and 3 g. 96% H₂SO₄ at 40-50° gave a neg. quinone test, and addition to 600 mL. H₂O precipitated 26.5 g.

2-hydroxy-3,6-dimethylhydroquinone triacetate (XXIII), m. 104-4.6°

(from C₆H₆-ligroine). XXIII (14 g.) was hydrolyzed under N with 15 g.

NaOH in dilute EtOH; acidification and addition of more alc. gave a clear light

yellow solution to which was added 54 g. FeCl₃.6H₂O in acidic EtOH; dilution

gave 5.7 g. 2-hydroxy-3,6-dimethyl-p-quinone (XXIV), m. 102-4° (decomposition) (sublimed at 80°/0.15 mm.). Cyclohexanebutyryl chloride

(22.6 g.) in 50 mL. absolute ether was shaken with ice and Na₂O₂ [from 17.2

mL. "Superoxol" (0.132 mol by titration) and a dilute solution of 9.6 g. NaOH],

shaking continued 10 min., and the ether layer washed with saturated salt

solution, dried over anhydrous MgSO₄, filtered, and diluted with 100 mL. dry

ether; a 1-mL. aliquot titrated iodometrically indicated the presence of

0.0405 mol bis(γ-cyclohexylbutyryl) peroxide. Alkylation of freshly

sublimed 4.56 g. XXIV in 75 mL. HOAc with this peroxide solution gave a red

oil, which was washed in ether with 3 portions saturated NaHCO₃ to remove

unreacted XXIV as the deep violet Na salt; the ether residue, crystallized from

petr. ether (b. 20-40°) at Dry-Ice temperature yielded 2.62 g. orange

2-hydroxy-3,6-dimethyl-5-(3-cyclohexylpropyl)-p-quinone, m. 80.0-0.7° (from petr. ether or dilute ETOH), gives a deep violet

Na

salt with NaOH. XXIV (3.04 g.) in AcOH was heated 1 h. on a steam bath

with 8.89 g. com. lauroyl peroxide, the HOAc distilled in vacuo, and

unalkylated quinone removed from the partially crystalline residue by extraction

with NaHCO₃; the residue from ligroine gave 2.68 g.

2-hydroxy-3,6-dimethyl-5-hendecyl-p-quinone, m. 102-2.3° (from ligroin, then dilute HOAc),

forms a deep violet Na salt from dilute NaOH.

ACCESSION NUMBER: 1952:8525 CAPLUS

DOCUMENT NUMBER: 46:8525

ORIGINAL REFERENCE NO.: 46:1499g-i,1500a-i,1501a-i,1502a-b

TITLE: Synthesis of some hydroxy alkylbenzoquinones

AUTHOR(S): McLamore, W. M.

CORPORATE SOURCE: Harvard Univ.

SOURCE: Journal of the American Chemical Society

(1951), 73,

2225-30

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 46:8525

IT 159977-36-3P, Acetophenone, 5'-cyclohexyl-2',4'

dihydroxy- 709032-55-3P, Acetophenone,

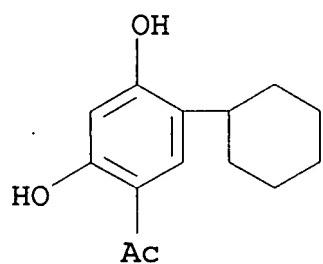
5'-(4-cyclohexylbutyl)-2',4'-dihydroxy-

RL: PREP (Preparation)

(preparation of)

RN 159977-36-3 CAPLUS

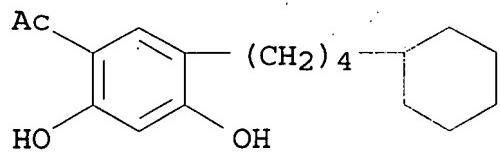
CN Ethanone, 1-(5-cyclohexyl-2,4-dihydroxyphenyl)- (9CI) (CA INDEX
NAME)



RN 709032-55-3 CAPLUS

CN Acetophenone, 5'-(4-cyclohexylbutyl)-2',4'-dihydroxy- (5CI) (CA INDEX

NAME)



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PALM INTRANET**Inventor Name Search Result**

Your Search was:

Last Name = GUPTA

First Name = SHYAM

Application#	Patent#	Status	Date Filed	Title	Inventor Name
08189799	5554999	150	02/01/1994	COLLAPSIBLE FLAT ANTENNA REFLECTOR	GUPTA, SHYAM
08502692	Not Issued	161	07/14/1995	PASSIVE ANTENNA REFLECTOR	GUPTA, SHYAM
10605191	Not Issued	61	09/14/2003	Baby Care Skin Protectant Compositions for Diaper Rash	GUPTA, SHYAM K
10708093	Not Issued	30	02/07/2004	Skin Darkening (Sunless Tanning) Compositions Based on Enhancement of Melanin Synthesis by Tyrosinase Promoters	GUPTA, SHYAM K
10908816	Not Issued	30	05/27/2005	New Ubiquitin-Proteasome Regulating Compounds and Their Application in Cosmetic and Pharmaceutical Formulations	GUPTA, SHYAM K
11161511	Not Issued	30	08/05/2005	Topical Deodorant Compositions Based on Hydroxycitric Acid	GUPTA, SHYAM K
11161575	Not Issued	30	08/08/2005	Stripless Depilatory Compositions	GUPTA, SHYAM K
11161856	Not Issued	30	08/19/2005	Sebum Control Compositions Based on Saponins and Sapogenins	GUPTA, SHYAM K
11162209	Not Issued	30	08/31/2005	Water Washable Hair Removal (Depilatory) Compositions	GUPTA, SHYAM K
11309437	Not Issued	30	08/04/2006	Multifunction "Crown Complexes" from Amino Acids and Peptides for Skin and Hair Restoration	GUPTA, SHYAM K
11670942	Not Issued	30	02/02/2007	Treatment of Topical Discomforts Including Acne, Sunburn, Diaper Rash, Wound, Wrinkles and Dandruff/Hair Loss by Natural Lignans via Fatty Acid Desaturase Inhibition	GUPTA, SHYAM K
10223671	Not	161	08/16/2002	Vitamin C stabilized topical	GUPTA, SHYAM

	Issued			formulation	K.
<u>10248508</u>	Not Issued	161	01/24/2003	Topical Nutraceutical Compositions with Selective Body Slimming and Tone Firming Antiaging Benefits	GUPTA, SHYAM K.
<u>10248691</u>	Not Issued	161	02/10/2003	Topically Bioavailable Acne and Rosacea Treatment Compositions	GUPTA, SHYAM K.
<u>10248753</u>	Not Issued	161	02/14/2003	Skin Firming Anti-Aging Cosmetic Mask Compositions	GUPTA, SHYAM K.
<u>10248817</u>	Not Issued	161	02/21/2003	Boosting Tyrosinase Inhibiting Activity of Skin Whitening and Sunscreen Compositions	GUPTA, SHYAM K.
<u>10248925</u>	Not Issued	161	03/03/2003	Cold wax hair removal (depilatory) compositions	GUPTA, SHYAM K.
<u>10249012</u>	Not Issued	41	03/10/2003	Transparent Cold-Wax and Hot-Wax Depilatory Compositions with Three-Dimensional Suspended Particles	GUPTA, SHYAM K.
<u>10249701</u>	Not Issued	161	05/01/2003	Cosmetic and Pharmaceutical Masks Based on Ion-Pair Delivery System	GUPTA, SHYAM K.
<u>10250045</u>	Not Issued	161	05/30/2003	Hair Care and Nail Care Compositions Based on Ion-Pair Delivery System for Gender and Ethnic Selective Applications	GUPTA, SHYAM K.
<u>10265000</u>	Not Issued	161	10/04/2002	Ascorbic acid salts of organic bases with enhanced bioavailability for synergistic anti-aging and skin protective cosmetic compositions	GUPTA, SHYAM K.
<u>10280519</u>	Not Issued	161	10/25/2002	Niacinamide, niacin, and niacin esters based delivery systems for treating topical disorders of skin and skin aging	GUPTA, SHYAM K.
<u>10290933</u>	Not Issued	161	11/07/2002	Hydroxy acids based delivery systems for skin resurfacing and anti-aging compositions	GUPTA, SHYAM K.
<u>10306948</u>	Not Issued	83	11/29/2002	Trace Metals synergized copper nucleotides and copper glycosides for anti-aging and antiviral compositions	GUPTA, SHYAM K.
<u>10307240</u>	Not Issued	168	11/29/2002	Topical formulation including stabilized water-soluble and oil-soluble compositions	GUPTA, SHYAM K.
<u>10394851</u>	Not Issued	161	03/22/2003	Hydroxycitric acid derivatives for body slimming and tone firming	GUPTA, SHYAM K.

				compositions	
<u>10418495</u>	Not Issued	161	04/18/2003	Controlled-release nano-diffusion delivery systems for cosmetic and pharmaceutical compositions	GUPTA, SHYAM K.
<u>10439349</u>	Not Issued	161	05/15/2003	Ion-pair delivery system for cosmetic and pharmaceutical compositions	GUPTA, SHYAM K.
<u>10604781</u>	7179477	150	08/15/2003	COSMETIC DERMABRASION TREATMENT SYSTEM	GUPTA, SHYAM K.
<u>10604999</u>	Not Issued	71	08/29/2003	Antiaging Cosmetic Delivery Systems	GUPTA, SHYAM K.
<u>10681938</u>	Not Issued	41	10/09/2003	Liposomal delivery system for topical pharmaceutical, cosmeceutical, and cosmetic ingredients	GUPTA, SHYAM K.
<u>10710011</u>	Not Issued	30	06/11/2004	Zeolite based UV Absorbing and Sunscreen Compositions	GUPTA, SHYAM K.
<u>10711136</u>	Not Issued	30	08/26/2004	Zinc Zeolite Based Deodorants and Deodorizers	GUPTA, SHYAM K.
<u>10711775</u>	Not Issued	71	10/04/2004	Matrix metalloprotease (MMP) inhibitors and their application in cosmetic and pharmaceutical composition	GUPTA, SHYAM K.
<u>10862037</u>	Not Issued	30	06/05/2004	Skin whitening compositions based on hydroxyaryl alkyl ketones and their isosteric derivatives	GUPTA, SHYAM K.
<u>10904665</u>	Not Issued	30	11/22/2004	Topical Delivery System for Cosmetic and Pharmaceutical Agents	GUPTA, SHYAM K.
<u>11126013</u>	Not Issued	161	05/10/2005	Topical formulation including stabilized water-soluble and oil-soluble compositions	GUPTA, SHYAM K.
<u>11163779</u>	Not Issued	30	10/31/2005	Cosmetic Applications of Sucrose Polyhydroxy LactoneConjugates for Demabrasion,Depilation (Hair Removal), and wrinkles Reduction	GUPTA, SHYAM K.
<u>11164709</u>	Not Issued	25	12/02/2005	Cosmetic and Pharmaceutical Masks for Skin Improvement	GUPTA, SHYAM K.
<u>11208306</u>	Not Issued	30	08/18/2005	Cosmetic or pharmaceutical composition for skin care	GUPTA, SHYAM K.
<u>11307729</u>	Not Issued	30	02/18/2006	Concurrent Enhancement of Skin Penetration of Organic Base Active Agents and Organic Hydroxy Acid Active Agents as Their Ion-Pair Complexes	GUPTA, SHYAM K.

<u>11307824</u>	Not Issued	30	02/24/2006	Controlled-Release of Cosmetic and Pharmaceutical Agents via Osmotic Nano-Diffusion from Zeolite Cage Complexes	GUPTA, SHYAM K.
<u>11308290</u>	Not Issued	30	03/15/2006	Topical Delivery of Trace Metals for Enzyme Modulation	GUPTA, SHYAM K.
<u>11309441</u>	Not Issued	30	08/06/2006	Novel Hydroxy Acid Complexes for Antiaging and Skin Renovation	GUPTA, SHYAM K.
<u>11615561</u>	Not Issued	19	01/01/2007	Skin Condition Improvement Including Acne, Rosacea, and Topical Wounds by Artemisia Annua Extract via Iron Siderophore Trojan Horse Delivery System	GUPTA, SHYAM K.
<u>11676284</u>	Not Issued	25	02/17/2007	Sunscreen Safety and Efficacy Enhancement with Manganese Complexes via Urocanate Pathway	GUPTA, SHYAM K.
<u>11684702</u>	Not Issued	20	03/12/2007	Skin Whitening Methods and Compositions Based on Zeolite - Active Oxygen Donor Complexes	GUPTA, SHYAM K.
<u>11716833</u>	Not Issued	19	03/12/2007	Topical formulation including stabilized water-soluble and oil-soluble compositions	GUPTA, SHYAM K.
<u>11760466</u>	Not Issued	20	06/08/2007	Zinc Zeolite for the Treatment for Diaper Rash (Diaper Dermatitis)	GUPTA, SHYAM K.
<u>06749324</u>	Not Issued	166	06/27/1985	SUPERFATTED SOAPS	GUPTA, SHYAM K.

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Last Name = GUPTA

First Name = SHYAM

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<u>06894445</u>	4704223	150	08/01/1986	SUPERFATTED SOAPS	GUPTA, SHYAM K.
<u>06912978</u>	Not Issued	168	09/29/1986	DETERGENT BAR COMPOSITIONS	GUPTA, SHYAM K.
<u>07079948</u>	Not Issued	161	07/31/1987	DETERGENT BAR COMPOSITIONS	GUPTA, SHYAM K.
<u>07851463</u>	5468887	150	03/13/1992	PRODUCTION OF FATTY ACID METHYL ESTERS AND SOAPS THEREFROM	GUPTA, SHYAM K.
<u>60569568</u>	Not Issued	159	05/10/2004	Topical skin treatment composition and method for applying the same, a system for creating the composition and conducting the method	GUPTA, SHYAM KIRTI

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